**Jackie Hess**

**Grade**

**Selected keywords:**

Grade 6

**Subject**

**Selected keywords:**

MATHEMATICS - Middle

**State Standard**

[https://lv.palmbeach.k12.fl.us/_layouts/LearningVillage/en-US/images/Icons/btn_expand.gif](https://lv.palmbeach.k12.fl.us/lvcontentitems_111/lvcontentitems_111/DispForm.aspx?ID=18&source=/_layouts/LearningVillage/CloseDialog.aspx)Expand Standards

**Student Target**

* I can estimate the product of decimals and judge the reasonableness of the results.

**Warm-Up**

https://k12media.mcgraw-hill.com/assets/math/crs1/img/global/pod_lo.jpg

*Have students complete this lesson opening. Use an LCD projector to display the problem on an overhead screen or a whiteboard. Give the students 2 minutes to try to solve the problem(s). Thoroughly discuss how to solve. Give suggestions on how to avoid common errors. Show slide 2 and discuss the solution(s).* (Addresses MA.6.A.5.3)

* https://k12media.mcgraw-hill.com/assets/math/crs1/icons/login-b.gif[1-1A Warm Up – MA.6.A.5.3 – Rounding Decimals](https://k12media.mcgraw-hill.com/assets/math/crs1/ppt/ch01/crs1_01-01a_pod.ppt" \t "blank)

**Materials**

**Teacher Needs**

* [Florida Math Connects Course 1 – Teacher Edition – pp. 27–31](https://k12media.mcgraw-hill.com/assets/math/crs1/twe/crs1_twe_c01-01.pdf" \l "page=1" \t "blank)
* Computer / LCD Projector (optional: Document Camera / Smart Board / iPad, Dry erase boards)
* Scissors

**Student Needs**

* [Florida Math Connects Course 1 – Student Edition – pp. 27–31](https://k12media.mcgraw-hill.com/assets/math/crs1/se/crs1_se_c01-01.pdf" \l "page=4" \t "blank)
* Pencil/paper

**Vocabulary**

*There is no new vocabulary in this lesson part.*

**Lesson/Activity**

* https://k12media.mcgraw-hill.com/assets/math/crs1/icons/dirinst.jpg**Direct Instruction**

**Essential Question(s)**

* How can you estimate the product of decimals? [Sample answer: Round each factor to the nearest whole number. Then multiply.]

* How can you determine the reasonableness of a result? [Sample answer: Estimate the product and compare it to the actual answer to see if they are close.]

*Play the following Personal Tutor to students to introduce estimating the products of decimals.*  
**Personal Tutor**

* https://k12media.mcgraw-hill.com/assets/math/crs1/icons/animation-b.gif[1-1A Estimate Products Using Rounding](http://glencoe.com/sites/common_assets/mathematics/0078916399/pt/MC1_11_1-1A-1.swf" \t "blank) – Example 1

*Use the following real-world example to illustrate how to estimate the product of decimals and determine the reasonableness of results.*  
**Guided Practice**

**SPACE TRAVEL** While in orbit, the space shuttle travels at a rate of about 4.9 miles per second. About how many miles does it travel in 5.2 seconds?

* [Problem 1](https://k12media.mcgraw-hill.com/assets/math/crs1/ppt/ch01/crs1_01-01a_wtae1_click.pdf" \t "blank)

Tell students: You are asked to find *about* how far the shuttle traveled. You know the time, 5.2 seconds, and the speed, 4.9 miles per second. The word *about* means *to estimate*.

* First, round each factor to the nearest whole number. Then multiply.

* [Solution: Multiplication 1](https://k12media.mcgraw-hill.com/assets/math/crs1/ppt/ch01/crs1_01-01a_wtae2_click.pdf" \t "blank)

Tell students: The product is 25. In 5.2 seconds, the shuttle travels *about* 25 miles.

Ask students:  
Is this estimate reasonable? Explain. [The estimate is reasonable. One factor was rounded up and one factor was rounded down. So, the estimate is close to the exact answer.]

**Common Error** In Exercises 1–6, 9–11, and 15–17 on page 29 of the textbook, students may have difficulty multiplying in horizontal form. Remind students that they may rewrite the problems in vertical form.

*Use the following activity to help students judge the reasonableness of estimates.*

* https://k12media.mcgraw-hill.com/assets/math/crs1/icons/grpact.jpg**Group Activity**

Write the estimates shown below, without the given answers, on a sheet of paper. Make enough copies for the number of small groups that you will have. Cut the paper to make 12 “cards” in each set.

* [Table 1](https://k12media.mcgraw-hill.com/assets/math/crs1/ppt/ch01/crs1_01-01a_ppd1_click.pdf" \t "blank)

Have students work in small groups. Give each group a set of estimate cards. Tell each group to divide a piece of paper into three columns, labeled “Estimate is high,” “Estimate is low,” and “Estimate is close.” Explain that the group should place each card under the appropriate heading by considering only the factors and the estimate.

After each group has finished placing the cards, have each student use a calculator to find the actual product and compare it to the estimate. If a card is not in the correct column, it should be moved. Then each group should generate a rule for judging the results of an estimate. [Sample answer: When both numbers are rounded down, the estimate is low. When both numbers are rounded up, the estimate is high. When one number is rounded up and the other rounded down, the estimate is close.]

* https://k12media.mcgraw-hill.com/assets/math/crs1/icons/indprct.jpg**Independent Practice**

*For additional practice in class, assign the exercises listed below to reinforce the lesson.*

* https://k12media.mcgraw-hill.com/assets/math/crs1/icons/openbook-b.gif[Student Edition – pp. 29–31](https://k12media.mcgraw-hill.com/assets/math/crs1/se/crs1_se_c01-01.pdf" \l "page=6" \t "blank)

* + Exercises 2, 5, 18, 20, 27, 33, 39

*Assign the following worksheet to students as homework to reinforce the lesson.*

* https://k12media.mcgraw-hill.com/assets/math/crs1/icons/crm-b.gif[1-1A Problem-Solving Practice](http://glencoe.com/sites/common_assets/mathematics/0078916399/worksheets/FLMC1CRM01_1A_PSP_15.pdf" \t "blank)

**Wrap-Up**

**Review**

*Guide a discussion through the following problems to wrap up key ideas learned in the lesson.*

* https://k12media.mcgraw-hill.com/assets/math/crs1/icons/blms-b.gif[5-Minute Check, Lesson 1-1A](http://glencoe.com/sites/common_assets/mathematics/0078916399/LP/FL5MC1_1_1A_se.pdf" \t "blank) (Reviews MA.6.A.5.3)